UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,770	05/13/2005	Shingo Kawai	85367	1782

22242 7590 06/26/2007
FITCH EVEN TABIN AND FLANNERY
120 SOUTH LA SALLE STREET
SUITE 1600
CHICAGO, IL 60603-3406

EXAMINER	
CARTER, MICHAEL W	

ART UNIT	PAPER NUMBER
2809	

MAIL DATE	DELIVERY MODE
06/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,770	Applicant(s) KAWAI ET AL.	
	Examiner Michael Carter	Art Unit 2809	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/11/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 10 is objected to because of the following informalities: "the threshold values" lacks strict antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, and 8-10, 14 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Stewart et al. US PG Pub. 2004/0114646 (hereinafter referred to as Stewart).

4. For claim 1, Stewart teaches an optical module comprising: a measurement portion for measuring a laser diode temperature (figure 5, label 110) and bias current (paragraph 44, lines7-10) or only the temperature; a storage portion in which the relationship between the temperature, bias current and wavelengths or between the temperature and wavelengths is stored (figure 10 and paragraph 66); and a central controlling portion for controlling the measurement portion and the storage portion (figure 5, label 200); wherein a wavelength is calculated on the basis of the relationship stored in the storage portion.

5. For claim 2, Stewart teaches the optical module comprising a laser diode drive current controlling circuit (figure 5, label 108), which controls the drive current of the laser diode, and includes a feature of feeding the bias current information calculated from the measurement portion back to the laser diode drive current controlling circuit (paragraph 68, lines 8-12).

6. For claim 3, Stewart teaches the optical module comprising a temperature adjusting portion composed of a temperature controlling device (figure 5, labels 114 and 116) and includes a feature of feeding the wavelength information calculated from the storage portion back to the temperature adjusting portion (paragraph 68, lines 8-12).

7. For claim 4, Stewart teaches a method for monitoring wavelengths in an optical transmitter module or optical transmitter and receiver module internally including a measurement portion for measuring a laser diode temperature and bias current or only the temperature, a storage portion in which the relationship between the temperature, bias current and wavelengths or between the temperature and wavelengths is stored, and a central controlling portion for controlling the measurement portion and the storage portion (figure 5), wherein the method comprising a step of: calculating wavelength information on the basis of the temperature and bias current or the temperature measured by the measurement portion, and the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion (paragraph 68, lines 8-12).

8. For claim 8, Stewart teaches the step of calculating wavelength information extracts a wavelength information by causing the measured temperature and bias

current to correspond to any one of the temperatures or the temperature and bias current stored in matrices indicating the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelength stored in the storage portion (paragraph 68, lines 8-12).

9. For claim 9, Stewart teaches a method for monitoring and controlling wavelengths of an optical transmitter module or optical transmitter and receiver module internally including: a measurement portion for measuring a laser diode temperature and bias current or only the temperature; a storage portion in which the relationship between the temperature, bias current and wavelengths or between the temperature and wavelengths is stored; a central controlling portion for controlling the measurement portion and the storage portion; and a temperature adjusting portion composed of a temperature controlling device (figure 5), wherein the method comprising steps of: calculating wavelength information on the basis of the temperature and bias current or only the temperature measured by the measurement portion, and the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion; and adjusting and controlling the internal temperature by feeding back to the temperature adjusting portion using the calculated wavelength information (paragraph 68, lines 8-12).

10. For claim 10, Stewart teaches a step further comprising: comparing the threshold values, in which the minimum value and maximum value of wavelengths are predetermined (claim 7, lines 15-17), with the wavelength information calculated in the step of calculating wavelength information; wherein the step for controlling temperature

feeds back to the temperature adjusting portion when the result of comparison made by the wavelength information comparing step is outside the threshold values, lowering the internal temperature by the temperature adjusting portion when the result is smaller than or equal to the minimum value of the threshold values, and raising the internal temperature by the temperature adjusting portion when the result is larger than or equal to the maximum value of the threshold values (paragraph 65, lines 4-10 and paragraph 9, line 7).

11. For claim 14, Stewart teaches the step of calculating wavelength information extracts a wavelength by causing the measured temperature and bias current to correspond to any one of the temperatures stored in matrices indicating the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion (paragraph 68, lines 8-12).

12. For claim 18, Stewart teaches the step of calculating wavelength information extracts a wavelength information by causing the measured temperature and bias current to correspond to any one of the temperatures stored in matrices indicating the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion; and the step of controlling temperature extracts a temperature from the matrices, which gives a prescribed wavelength at the corresponding bias current, and feeds it back to the temperature adjusting portion so as to secure the extracted temperature (paragraph 68, lines 8-12).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 5, 7, 11, 13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Burden et al., Numerical Analysis. Boston: Prindle, Weber & Schmidt, Inc., 1978 (hereinafter referred to as Burden).

15. For claims 5, 7, 11, 13, 15 and 17 Stewart remains applied as above.

16. For claim 5, Stewart does not teach the step for calculating wavelength information obtains λc, ic, a, and b in Equation (1) or λc and a in Equation (2) by using the temperature and bias current or the temperature measured by the measurement portion, and the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion, and calculates wavelength information; $\lambda=\lambda c+aT+b(i-ic)$ Equation (1) $\lambda=\lambda c+aT$ Equation (2) (where λc is a wavelength at temperature 0°C and threshold current value ic, a and b are coefficients, T is a temperature, and i is a bias current).

However, Burden does teach linear interpolation which obtains λc (a0) and a (a_1) (page 89, equation 3.2) in order to obtain values that are not in the table (page 81).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of

Stewart with the interpolation of Burden in order to obtain values that are not in the table.

17. For claim 7, Stewart does not teach the method for monitoring wavelengths, wherein the step of calculating wavelength information selects a smaller temperature T1 than the measured temperature T_{mes}, a larger temperature T2 than the measured temperature T_{mes}, a smaller bias current I1 than the measured bias current I_{mes}, a larger bias current I2 than the measured bias current Imes, and a bias current I3 differing from the bias currents I1 and I2 by using the temperature and bias current measured by the measurement portion, and the relationship between the laser diode temperature, bias current and wavelengths stored in the storage portion; extracts six wavelengths ($\lambda11= \lambda(I1, T1)$, $\lambda21=.\lambda(I2, T1)$, $\lambda 12= \lambda (I1, T2)$, $\lambda 22= \lambda (I2, T2)$, $\lambda 31= \lambda (I3, T1)$, and $\lambda32= \lambda(I3, T2)$ corresponding thereto; approximates the bias current dependency of the wavelength at the temperature T1 by a quadratic function using λ 11, λ 21 and λ 31; approximates the bias current dependency of the wavelength at the temperature T2 by a quadratic function using λ 12, λ 22 and λ 32; and calculates the wavelength $\lambda_{mes}=(I_{mes}, T_{mes})$ at the measured bias current I_{mes} and temperature T_{mes}.

However, Burden does teach using 2^{nd} degree polynomials based on known data points (page 91) in order to obtain values that are not in the table (page 81).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with Burdern's 2^{nd} degree polynomial interpolation in order to obtain values that are not in the table.

18. For claim 11, Stewart does not teach the step of calculating wavelength information uses the temperature and bias current or only the temperature measured by the measuring portion, and the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion, and calculates wavelength information by obtaining λc, ic, a, and b in Equation (1) or λc and a in Equation (2); $\lambda = \lambda c + aT + b(i - ic)$ Equation (1) $\lambda = \lambda c + aT$ Equation (2) (where λc is a wavelength at temperature 0°C. and threshold current value ic, a and b are coefficients, T is a temperature, and i is a bias current).

However, Burden does teach linear interpolation which obtains λc (a0) and a (a_1) (page 89, equation 3.2) in order to obtain values that are not in the table (page 81).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with the interpolation of Burden in order to obtain values that are not in the table.

19. For claim 13, Stewart does not teach the method for monitoring wavelengths, wherein the step of calculating wavelength information selects a smaller temperature T1 than the measured temperature T_{mes}, a larger temperature T2 than the measured temperature T_{mes}, a smaller bias current I1 than the measured bias current I_{mes}, a larger bias current I2 than the measured bias current Imes, and a bias current I3 differing from the bias currents I1 and I2 by using the temperature and bias current measured by the measurement portion, and the relationship between the laser diode temperature, bias current and wavelengths stored in the storage portion; extracts six wavelengths (λ11=

λ(I1, T1), λ21=.λ(I2, T1), λ 12= λ (I1, T2), λ 22= λ (I2, T2), λ 31= λ (I3, T1), and λ32= λ(I3, T2) corresponding thereto; approximates the bias current dependency of the wavelength at the temperature T1 by a quadratic function using λ 11, λ 21 and λ 31; approximates the bias current dependency of the wavelength at the temperature T2 by a quadratic function using λ 12, λ 22 and λ 32; and calculates the wavelength λ_{mes}=(I_{mes}, T_{mes}) at the measured bias current I_{mes} and temperature T_{mes}.

However, Burden does teach using 2nd degree polynomials based on known data points (page 91) in order to obtain values that are not in the table (page 81).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with Burdern's 2nd degree polynomial interpolation in order to obtain values that are not in the table.

20. For claim 15, Stewart teaches a selected temperature is used to configure the temperature of the laser (paragraph 68, lines 8-12).

For claim 15, Stewart does not teach the step of calculating wavelength information obtains λc, ic, a, and b in Equation (1) or λc and a in Equation (2) by using the temperature and bias current or only the temperature measured by the measuring portion, and the relationship between the laser diode temperature and wavelengths or between the laser diode temperature, bias current and wavelengths stored in the storage portion, and calculates wavelength information; and the step of controlling temperature calculates a temperature, which gives a prescribed wavelength by using the calculated wavelength information and Equations (1) or (2), and feeds it back to the

temperature adjusting portion so as to secure said temperature; $\lambda = \lambda c + aT + b(i - ic)$ Equation (1) $\lambda = \lambda c + aT$ Equation (2) (where λc is a wavelength at temperature 0°C. and threshold current value ic, a and b are coefficients, T is a temperature, and i is a bias current).

However, Burden does teach linear interpolation which obtains λc ($a0$) and a (a_1) (page 89, equation 3.2) in order to obtain values that are not in the table (page 81).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with the interpolation of Burden in order to obtain a temperature value not in the table.

21. For claim 17, Stewart teaches a selected temperature is used to configure the temperature of the laser (paragraph 68, lines 8-12).

For claim 17, Stewart does not teach the step of calculating wavelength information selects a smaller temperature T1 than the measured temperature T_{mes}, a larger temperature T2 than the measured temperature Tmes, a smaller bias current I1 than the measured bias current I_{mes}, a larger bias current I2 than the measured bias current Imes, and a bias current I3 differing from the bias currents I1 and I2 by using the temperature and bias current measured by the measurement portion, and the relationship between the laser diode temperature, bias current and wavelengths stored in the storage portion; extracts six wavelengths ($\lambda 11 = \lambda(I1, T1)$, $\lambda 21 = \lambda(I2, T1)$, $\lambda 12 = \lambda(I1, T2)$, $\lambda 22 = \lambda(I2, T2)$, $\lambda 31 = \lambda(I3, T1)$, and $\lambda 32 = \lambda(I3, T2)$ corresponding thereto; approximates the bias current dependency of the wavelength at the temperature T1 by

a quadratic function using λ11, λ21 and λ31; approximates the bias current dependency of the wavelength at the temperature T2 by a quadratic function using λ12, λ22 and λ32; and calculates the wavelength $\lambda_{mes} = \lambda(I_{mes}, T_{mes})$ at the measured bias current I_{mes} and temperature T_{mes}; and the step for controlling temperature calculates a temperature, which gives a prescribed wavelength at the measured bias current I_{mes}, on the basis of the temperature dependency of the wavelength, and feeds it back to the temperature adjusting portion so as to secure the calculated temperature.

However, Burden does teach using 2nd degree polynomials based on known data points (page 91) in order to obtain values that are not in the table (page 81).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with the 2nd degree polynomials of Burden in order to obtain a temperature value not in the table.

22. Claim 6, 12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Chrisman, "Glossary for exploring Geographic Information Systems," 1997, John Wiley and Sons, <http://www.wiley.com/college/chrisman/glossary.html> (herein after referred to as Chrisman).

23. For claims 6, 12, and 16, Stewart remains applied as above.

24. For claim 6, Stewart does not teach the step of calculating wavelength information selects a smaller temperature value T1 than the measured temperature T_{mes}, a larger temperature value T2 than the measured temperature T_{mes}, a smaller bias

current value I1 than the measured bias current I_{mes} and a larger bias current value I2 than the bias current value Imes by using the temperature and bias current measured by the measurement portion, and the relationship between the laser diode temperature, bias current and wavelengths stored in the storage portion; extracts four wavelengths ($\lambda11=\lambda(I1, T1)$, $\lambda21=\lambda(I2, T1)$, $\lambda12= \lambda(I1, T2)$, and $\lambda22= \lambda(I2, T2)$) corresponding thereto; and calculates the wavelength $\lambda mes1= \lambda(I_{mes}, T1)$ at the measured bias current Imes by linearly interpolating the bias current dependency of the wavelengths at temperature T1 using λ11 and λ21; calculates the wavelength $\lambda_{mes2}=(I_{mes}, T2)$ at the measured bias current I_{mes} by linearly interpolating the bias current dependency of the wavelength at temperature T2 using λ12 and λ22; and calculates the wavelength $\lambda_{mes}=(I_{mes}, T_{mes})$ at the measured bias current I_{mes} and temperature T_{mes} by linearly interpolating the temperature dependency of the wavelength at the bias current I_{mes} using the calculated λ_{mes1} and λ_{mes2}.

However, Chrisman does teach bilinear interpolation in order to obtain a value not in a table where there are two variables (glossary).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with the bilinear interpolation of Chrisman in order to obtain values that are not in the table.

25. For claim 12, Stewart does not teach the step of calculating wavelength information selects a smaller temperature value T1 than the measured temperature T_{mes}, a larger temperature value T2 than the measured temperature T_{mes}, a smaller bias

current value I1 than the measured bias current I_{mes} and a larger bias current value I2 than the bias current value I_{mes} by using the temperature and bias current measured by the measurement portion, and the relationship between the laser diode temperature, bias current and wavelengths stored in the storage portion; extracts four wavelengths ($\lambda11= \lambda(I1, T1)$, $\lambda21= \lambda(I2, T1)$, $\lambda12= \lambda(I1, T2)$), and $\lambda22= \lambda(I2, T2)$ corresponding thereto; and calculates the wavelength $\lambda_{mes1}= \lambda(I_{mes}, T1)$ at the measured bias current Imes by linearly interpolating the bias current dependency of the wavelengths at temperature T1 using $\lambda11$ and $\lambda21$; calculates the wavelength $\lambda_{mes2}=(I_{mes}, T2)$ at the measured bias current I_{mes} by linearly interpolating the bias current dependency of the wavelength at temperature T2 using $\lambda12$ and $\lambda22$; and calculates the wavelength $\lambda_{mes}=(I_{mes}, T_{mes})$ at the measured bias current I_{mes} and temperature T_{mes} by linearly interpolating the temperature dependency of the wavelength at the measured bias current I_{mes} using the calculated λ_{mes1} and λ_{mes2}.

However, Chrisman does teach bilinear interpolation in order to obtain a value not in a table where there are two variables (glossary).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information of Stewart with the bilinear interpolation of Chrisman in order to obtain values that are not in the table.

26. For claim 16, Stewart teaches a selected temperature is used to configure the temperature of the laser (paragraph 68, lines 8-12).

For claim 16, Stewart does not teach the step of calculating wavelength information selects a smaller temperature value T1 than the measured temperature T_{mes}, a larger temperature value T2 than the measured temperature T_{mes}, a smaller bias current value I1 than the measured bias current I_{mes} and a larger bias current value I2 than the bias current value Imes by using the temperature and bias current measured by the measurement portion, and the relationship between the laser diode temperature and bias current and wavelengths stored in the storage portion; extracts four wavelengths ($\lambda 11= \lambda(I1, T1)$, $\lambda 21= \lambda(I2, T1)$, $\lambda 12= \lambda(I1, T2)$, and $\lambda 22= \lambda(I2, T2)$ corresponding thereto; and calculates the wavelength $\lambda_{mes1}= \lambda(I_{mes}, T1)$ at the measured bias current I_{mes} by linearly interpolating the bias current dependency of the wavelengths at temperature T1 using $\lambda 11$ and $\lambda 21$; calculates the wavelength $\lambda_{mes2}=(I_{mes}, T2)$ at the measured bias current I_{mes} by linearly interpolating the bias current dependency of the wavelength at temperature T2 using $\lambda 12$ and $\lambda 22$; and calculates the wavelength $\lambda_{mes}=(I_{mes}, T_{mes})$ at the measured bias current I_{mes} and temperature T_{mes} by linearly interpolating the temperature dependency of the wavelength at the measured bias current I_{mes} using the calculated wavelength λ_{mes1} and λ_{mes2}; and the step for controlling temperature calculates a temperature, which gives a prescribed wavelength at the measured bias current I_{mes}, on the basis of the temperature dependency of the wavelength, and feeds it back to the temperature adjusting portion so as to secure the calculated temperature.

However, Chrisman does teach bilinear interpolation in order to obtain a value not in a table where there are two variables (glossary).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method for calculating wavelength information and controlling temperature of Stewart with the bilinear interpolation of Chrisman in order to obtain temperature values that are not in the table.

27. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart in view of Sato US Patent 6,393,041 (hereinafter referred to as Sato).

28. For claim 19, Stewart remains applied as above.

29. For claim 19, Stewart does not teach the method further comprising, before the step of calculating wavelength information, steps of: comparing threshold values of an optical output alarm or warning, in which the minimum value and maximum value of optical output are predetermined, with the optical output measured by the measurement portion; and on the basis of a comparison made by the optical output comparing step, feeding the result back to the laser diode drive current controlling circuit when the result is outside the range of the threshold values, raising the bias current by the laser diode drive current controlling circuit if the result is smaller than or equal to the minimum value of the threshold values, and lowering the bias current by the laser diode drive current controlling circuit if the result is larger than or equal to the maximum value of the threshold values.

However, Sato teaches comparing threshold values of an optical output alarm or warning, in which the minimum value and maximum value of optical output are predetermined, with the optical output measured by the measurement portion; and on the basis of a comparison made by the optical output comparing step, feeding the result

back to the laser diode drive current controlling circuit when the result is outside the range of the threshold values, raising the bias current by the laser diode drive current controlling circuit if the result is smaller than or equal to the minimum value of the threshold values, and lowering the bias current by the laser diode drive current controlling circuit if the result is larger than or equal to the maximum value of the threshold values (figure 1, labels 2,4, and 9 and abstract, lines 8-10) in order to control the optical intensity of the laser.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the method of Stewart with Sato's automatic power control in order to control the optical intensity of the laser.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Stewart US PG Pub. 2003/0152390 discloses additional features not disclosed in Stewart et al. US PG Pub. 2004/0114646.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Carter whose telephone number is (571) 270-1872. The examiner can normally be reached on Monday-Friday, 7:00 a.m.-4:30 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571) 272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MC

LEONARDO ANDUJAR
PRIMARY EXAMINER